BSTA 754
Advanced Survival Analysis
Fall I 2020 Syllabus
(08/29/2020)

- <u>Course Description</u>: A doctoral-level course in survival analysis, intended to verse students in the techniques necessary to understand and carry out methods research in survival analysis. Lectures study the large-sample properties of estimators based on one-sample, k-sample and partial likelihood inference, with proofs based on counting process and Martingale theory. The theory of competing risks is studied from several angles. Many extensions of the Cox model to more complex data structures are considered.

- <u>Credit</u>: 0.5 credit hours

- <u>Course Prerequisites</u>: BSTA 622 (may be taken concurrently), or permission of instructor

- <u>Lectures</u>: Mon/Wed, 1:30-2:45 (Blue Jeans)

- <u>Instructor</u>: Douglas Schaubel, Ph.D (email: douglas.schaubel@pennmedicine.upenn.edu; office: Blockley Hall: 614)

- <u>Office Hours</u>: Fridays: 2:00-3:00; other times may be available by appointment.

- <u>Text</u> various readings (book excepts) will be posted.

- <u>Computing</u>: SAS, R

- <u>Grading</u>:

    ○ homeworks (likely 3): 65%

    ○ final exam (24-hour take-home): 35%

- <u>Topics</u> (ordering is approximate):

- Introduction and fundamentals

- One-sample estimators

- Competing risks

- Counting processes and Martingales

- Two-sample tests

- Proportional hazards regression

- Additive hazards regression

- Multivariate survival

- Analysis of recurrent event data

- Temporal process regression

- Landmark analysis

- Causal inference with censored outcomes